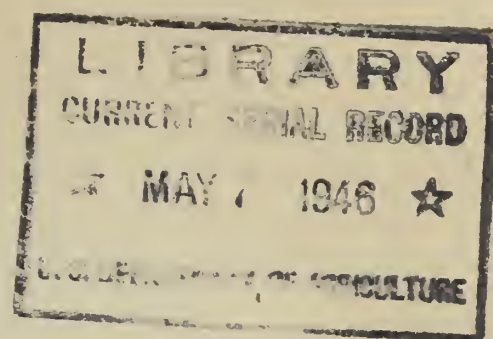


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Delivering
PETROLEUM TO FARMERS
Efficiently



BY J. WARREN MATHER



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U. S. DEPARTMENT OF AGRICULTURE, WASHINGTON, D. C.

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Detailed Report Available

This report is condensed from Miscellaneous Report 95A, "Delivery Efficiency of Petroleum Cooperatives Affiliated with Southern States Cooperative, Inc." by J. Warren Mather, Agricultural Economist. Copies of this and the complete publication the contents of which are listed on page i with more detailed analysis of data and description of operating methods may be obtained, while available, from -

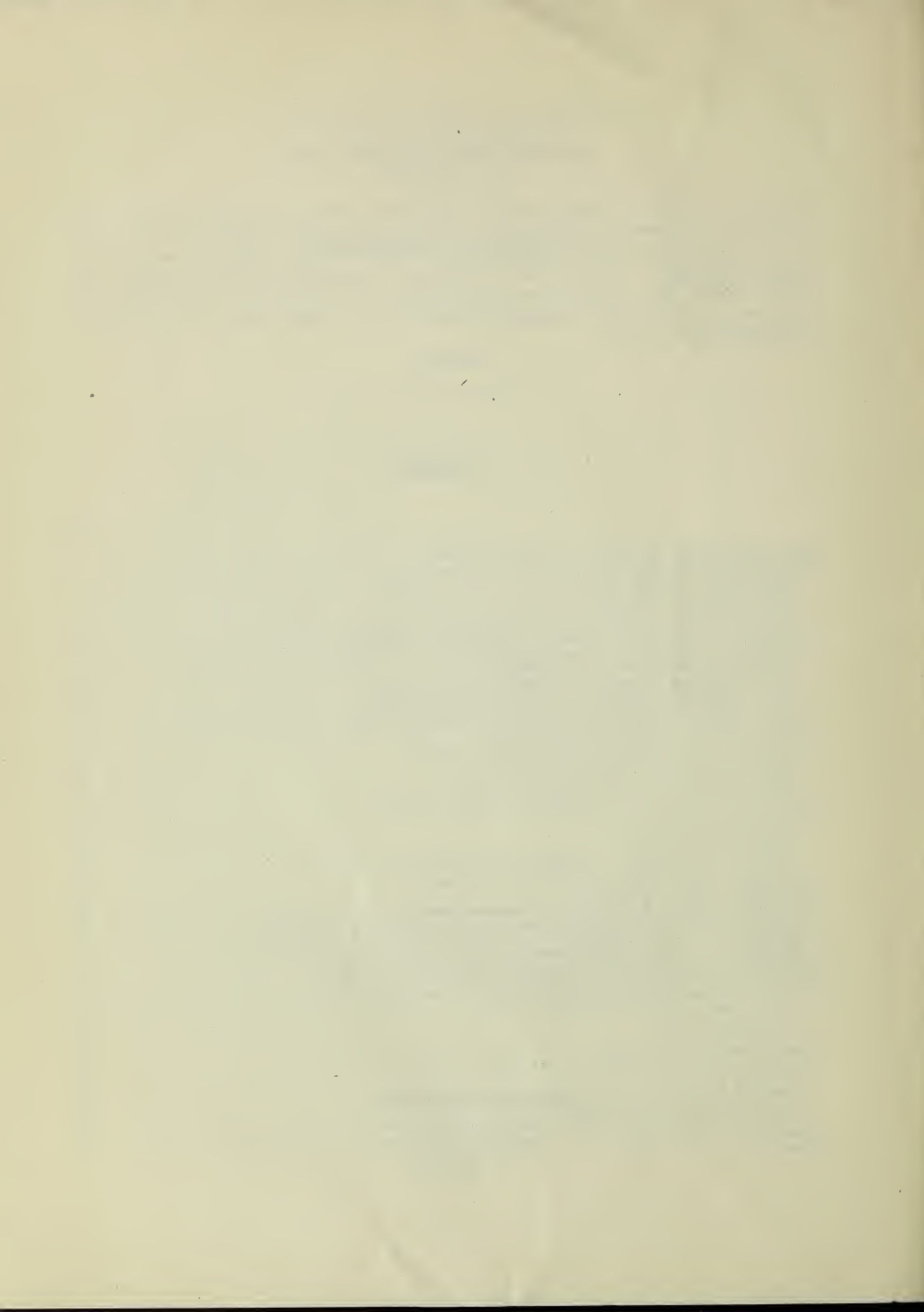
DIRECTOR OF INFORMATION AND EXTENSION
FARM CREDIT ADMINISTRATION
U.S. DEPARTMENT OF AGRICULTURE
WASHINGTON 25, D. C.

Detailed Report Also Available

This is a table of contents of a detailed research study on this same subject published as Farm Credit Administration Miscellaneous Report 95A. It is reproduced here to give you an idea of what information the full study includes. If you are interested in going into the subject further, copies may be obtained by writing the Division of Information and Extension, Farm Credit Administration, U. S. Department of Agriculture, Washington 25, D. C.

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DELIVERING PETROLEUM TO FARMERS EFFICIENTLY

By

J. Warren Mather
Agricultural Economist

Farming these days becomes more and more a job powered by fuel - implements towed across the fields by tractors, products sent to town and brought home by truck and family car.

Farmers are naturally interested in getting quality fuel to their machines as cheaply and efficiently as possible. Cooperatives in many parts of the country are doing their part of this job. The methods used change, however, as you go across the country from east to west. Most oil co-ops east of the Mississippi River deliver fuel to farms located on routes on definite schedules. In the Dakotas, Nebraska, Kansas, and on West most farmers get their products on the order system, phoning in for a truck to come out when their tanks run low. Most of their patrons are large users, one or two orders often taking an entire load. The area in between - Minnesota, Wisconsin, Iowa, Missouri - is a meeting place, using some of both methods. In Montana and Texas, however, many cooperatives operate on a dock station or a "come and get it" basis wherein farmers do their own fuel hauling.

WHAT TEN LOCALS HAVE DONE

The delivery methods used by many co-ops in the East can have possibilities for other localities - with modifications to fit each area. For that reason, we are giving here a picture of how one group operates to move their oil efficiently - serving an area 20 to 25 miles in each direction from each bulk plant. We have studied these particular operations pretty thoroughly at the request of the cooperatives themselves - 10 of the 17 local petroleum cooperatives affiliated with Southern States Cooperative, Inc., Richmond, Virginia, a regional purchasing wholesale serving farmers with fuels in four eastern and southern States, Delaware, Maryland, Virginia, and West Virginia.

These co-ops knew they were getting motor fuels out to their farms at low costs - 1.1 cents a gallon for delivery costs and 2.1 cents a gallon for total handling costs in the 1943-44 fiscal year. But they wanted to know if there were any leaks in their operations, if any of the pumps could be primed for better service.

Their size and success after a few years shows plainly that concentrating on delivery from bulk stations direct to farms is a sound basis of operation in this area. Their delivery costs were actually somewhat less than those of similar co-ops in other parts of the country and certainly much less than the usual amounts paid to truck operators on a commission basis by most co-ops.

These co-ops in the year ending June 1944, handled an average volume per association of about \$120,000 - 80 percent gasoline, 12 percent kerosene



Typical Routes Covered by a Farm Serviceman

other facilities. Under the terms of a standard contract, this management service is paid for on the basis of a certain percentage of volume. All co-ops are under the supervision of two district managers and the director of the Petroleum Management Service.

Although most local petroleum co-ops in the United States don't have a management service available from their wholesale - and perhaps haven't felt they needed it - they should be able to adopt many of the successful practices of these Southern States co-ops. If some see they could do part of their work better by going together, perhaps 10 or 15 locals could form a cooperative service organization to do some of this overall management or maintenance work. Or there is the possibility that such services could be provided by their affiliated wholesale in the future.

WHY TEN LOCALS WERE SUCCESSFUL

Success of these associations can be charged to the service to both large and small farms, good quality producers, and efficient operations.

SERVE BIG AND LITTLE FARMS

These associations have rendered a regular delivery service to all types of farmers regardless of their size or distance from bulk plants. They also supplied fuel to Southern States service stores and agencies. They in turn retailed the products to patrons. But in all this business more than one-half the patrons purchased less than \$100 worth of products during the 1942-43 fiscal year, accounting for only 13 percent of the

and fuel oil, 4 percent motor oil, and 4 percent supplies and grease. Something over 720,000 gallons of light fuels was the average quantity purchased by the 630 patrons per association. Total assets averaged \$34,422 per co-op.

Each association is a separately incorporated cooperative but Southern States Cooperative, the regional wholesale, helped finance them. Each association also employs the petroleum management service offered by the wholesale. This service covers general supervision over management, accounting, distribution, publicity, educational work, employee training, and operating policies. A maintenance division is also provided to take care of trucks and supervise

total volume. Managers felt these patrons should be carefully checked each year to see if more business could be obtained from them and to see that as little mileage as possible was driven to serve them.

At the other extreme, only 5 percent of the patrons bought more than \$500 worth of fuel. But their volume constituted 28 percent of the total. This indicates the importance of a relatively few large patrons in getting and holding a large volume of business in that area.

HANDLE QUALITY GOODS

The good service to patrons also included good quality products. They delivered gasoline, kerosene, motor oil, grease, and small amounts of automotive supplies to farmers, all of high grade, purchased through Southern States Cooperative. Most of these high test products came from the United Cooperatives, Inc., Alliance, Ohio, as Southern States is one of its members. Among other things, United selects and buys automotive and farm supplies and blends oil for its member regionals.

OPERATE EFFICIENTLY

These co-ops have done their job well - efficient operations is another name for it. To remain in business they have had to be efficient because their gross margins averaged only 13 to 14 cents per dollar of business and 2 to 2 1/4 cents per gallon of gasoline until 1943-44. Then they went up slightly to 16 cents per dollar of all commodities and 2.5 cents per gallon of gasoline.



Here a truck is loading up to start out on one of its regularly covered routes. Thus, they serve small users as well as large ones.

The high degree of efficiency is indicated by a break-down of total handling costs showing an average of 12.7 cents per dollar and 2.1 cents per gallon in 1943-44. Salaries and wages made up the largest expense item, around 40 percent. Truck expenses were next, a little over 2 percent. Shrinkage averaged only .3 of 1 percent of gasoline gallonage handled.

These co-ops found they must handle at least \$100,000 worth of business to keep expenses between 12 and 14 percent, at least \$120,000 to keep costs down to 10 and 12 percent. When they had a volume ranging from \$55,000 to \$85,000, expenses almost always ran over 15 percent. Putting it another way, these associations found they needed an annual volume of 600,000 gallons to keep costs down to the average of 12.7 cents per dollar and 2.1 cents a gallon.

The job done by Southern States co-ops seems particularly good when you look over the conditions under which they operate. The locals were new - the first one organized in 1938 - and growing rapidly. Then the war came along with all its problems; regulations, scarcity of supplies and delivery equipment, tire and gas rationing, and personnel turnover.

The area itself can be called relatively unfavorable for delivery service as much of it is rolling to hilly, even mountainous, and many of the roads aren't too good. Roads generally follow valleys with fewer cross-roads connecting them than in the more level country of the midwestern States. Also, the farms in this region do not use as much motorized equipment as in many other localities, cutting down potential volume. These farms average only one tractor per square mile of all land in 1940.

HOW THEY GOT LOW HANDLING COSTS

But with all these adverse conditions, Southern States co-ops have attained low handling costs. Such costs are made up of usual overhead expenses, largely fixed, and delivery costs from bulk stations out to farms which often can be lowered.

The delivery cost figure of 1.1 cents a gallon represented more than half the total handling costs - equivalent to almost 7.0 cents for each dollars worth of business in 1943-44. These costs are not fixed. They often can be trimmed down or more volume can be delivered at little extra cost. Therefore, here is one of the first places to look if an association wants to cut its expenses per gallon or unit. Of course, if farm servicemen and their trucks are employed on a commission basis savings resulting from delivery efficiencies will accrue to them rather than to the cooperative and its patrons unless adjustments are made in commission rates.

Among Southern States cooperatives, at least six phases of the operations are carefully watched to bring about low handling costs - delivery operations of men and trucks, delivery costs involving operating expenses of tank trucks and farm servicemen's wages, equipment, the route system, the loaning of farm storage equipment, and over-all proper management including detailed records.

MEN AND TRUCKS DID JOB WELL

Just how well each farm serviceman and his truck did their job should be known. In checking farm deliveries for the year 1943-44, these co-ops found the average volume delivered per farm serviceman or tank truck was a little over 300,000 gallons, average mileage per truck was nearly 16,000, and average gallons of fuel delivered per mile of travel was 19.4, an exceptionally good performance considering the conditions under which they operate. Improvement during the 3-year period ending in June 1944, is shown in table 1. Most farm servicemen ranged between 15 and 24 gallons per mile of travel.

Table 1. - Delivery operations of tank trucks of 10 petroleum cooperatives during fiscal years ended June 20-30, 1942-44

Number of full-time trucks ^a	Fiscal year ended June 20-30	Gallons delivered per truck	Miles driven per truck	Gallons delivered per mile driven
16.....	1942	314,479	19,082	16.5
22.....	1943	284,986	15,678	18.2
22.....	1944	308,441	15,885	19.4

^aCovers the full year's operation of a farm serviceman and his truck, or their equivalent, in a specified territory. In a few cases two different trucks or two different servicemen operated in the territory during the year.

The number of gallons delivered for each mile driven is a simple measure of the efficiency with which the oil moves to the farms. If it doesn't look good, steps can be taken to remedy the situation - steps that cover all the delivery operations. Southern States co-ops brought the figure up by eliminating all superfluous travel. This was done by having each truck cover smaller territories if possible, by planning routes more carefully, by covering these routes only once every 3 or 4 weeks in the slack winter season, by encouraging minimum deliveries of 25 gallons, and by eliminating call-backs.

Variations in performance of men and trucks trace back to size and shape of territories in relation to location of the bulk plant, proportion of farm volume handled, distance between patrons, extent to which routes were well organized and currently revised, changes in farm servicemen and differences in their abilities, topography and road system in each territory, and extent of power farming in the area covered.

To show a true picture of delivery operations of each truck, records on rural or farm deliveries and mileages and those to stations or service agencies should be kept separately.

WATCHED DELIVERY COSTS CLOSELY

The most valuable yardsticks to measure the efficiency of the farm serviceman and his truck are delivery costs per gallon of fuel handled and costs per mile driven. Such costs averaged about 1.1 cents per

gallon and 21 cents per mile in 1943-44 (see table 2). Total delivery costs per mile, however, are of value mainly for comparing trucks having similar annual mileages because those with highest costs per mile frequently have lowest costs per gallon. Two items contribute their part as essential elements in keeping these delivery costs low - operating expenses of tank trucks and farm servicemen's wages.

Truck Costs Controlled. - Truck operating expenses were equivalent to approximately one-half cent a gallon for each of 3 years studied and to 9.8 cents per mile in 1943-44 compared with 8 cents in 1941-42. The increase in expense per mile came mainly from added costs for tires, tubes, and repairs. But the figures were fairly reasonable considering the volume handled, type of area covered, and the age and condition of the trucks.

Southern States Petroleum Management Service has developed a set basis for computing these expenses. Gas, oil, grease, and anti-freeze are charged to the truck at cost price. A reserve for tires and tubes is charged at a rate of 1.5 cents a mile but if a deficit occurs a rate of 2 cents is used. Actual expenditures are charged against the reserve at cost prices to the locals. The co-ops have also set up a reserve for repairs to distribute such costs evenly over the year - now totaling \$30 a month with \$10 set aside for parts and \$20 for services of traveling maintenance men.

Depreciation on both tank and truck were originally figured on the basis of a life of 125,000 miles. They are now depreciated separately, trucks at 80,000 miles and tanks on a straight line basis over a 10-year period.

Table 2. - Total delivery costs of 22 tank trucks and farm servicemen in 10 petroleum cooperatives during the fiscal year ended June 20-30, 1944^a

Cost item	Average amount	Per gallon delivered	Per mile driven
	<i>Dollars</i>	<i>Cents</i>	
Annual truck operating expenses:			
Gasoline.....	315	.11	2.1
Oil, grease, anti-freeze.....	28	.01	0.2
Tires and tubes.....	226	.08	1.5
Repairs.....	340	.12	2.3
Interest, taxes, insurance, and depreciation.....	541	.18	3.7
Total truck expenses.....	1,450	.50	9.8
Farm servicemen's annual wages ^b ..	1,690	.58	11.4
Total delivery costs.....	3,140	1.08	21.2

^aIncludes trucks which were in operation 10 months or more during the year. The average volume delivered per truck was 291,097 gallons and the average mileage driven was 14,864 miles.

^bApproximate totals. Wages as allocated to delivery costs in operating statements averaged \$1,450 for the year which was equal to 0.43 cent per gallon and 8.4 cents per mile.

Taxes, insurance, and interest must also be allowed for. Taxes include license plates, city tags, and Federal use stamps but personal property taxes are not charged to trucks because of variations among States. Insurance includes public liability and property damage and collision, fire, and theft provisions. Interest was computed at 5 percent a year on the original cost of tank and truck. This averaged \$136 for 1943-44. An accounting of the expenses of loaning trucks from one association to another is required also.

However, when operating statement forms for truck expenses are revised, it would seem advisable to include only direct expenses and to itemize them as follows: gasoline, motor oil, lubrication and anti-freeze, tires and tubes, chains and small tools, repairs and operating supplies, insurance, licenses and taxes, depreciation, delivery service used in loaning of trucks, miscellaneous, and total truck operating expense. Interest isn't included because it is believed it belongs with other general overhead and operating expenses. However, if interest is included, a sub-total should be shown before interest as the amount may vary greatly among associations.

Servicemen's Wages. - Farm servicemen's wages, another important part of total delivery costs, averaged approximately \$1,690 a man in 1943-44 or about .6 cent a gallon. Adding this to truck operating expenses resulted in the total delivery costs of 1.1 cents per gallon. Social security taxes and bonding expenses of farm servicemen were not included in delivery costs.

Operating statements of the cooperatives, however, charged part of the farm servicemen's wages to general operating expenses. On this basis their wages were equivalent to slightly more than .4 cent a gallon and total delivery costs slightly more than .9 cent a gallon in 1943-44.

The reasoning back of charging part of farm servicemen's wages to general operating expenses was that they devote part of their time to membership and educational work while on trucks and part to general duties while at the plant. Most petroleum cooperatives throughout the country include the total salary of the farm servicemen in computing delivery costs. Some with several departments, on the other hand, allocate a portion of general overhead costs to delivery expense in addition to the entire salary of the serviceman. Thus, it is important to know the basis of computation if delivery efficiency and costs among cooperatives is compared.

TOOK GOOD CARE OF GOOD EQUIPMENT

Now, after this brief review of delivery and truck costs, let's move on to a third factor - equipment. Under this heading come buildings, bulk tanks and their pumps and meters, and the trucks with their tanks and unloading pumps and meters.

The average investment in all facilities figured at cost for these co-ops in June 1944 - fixed assets in the accountant's name - was \$23,289

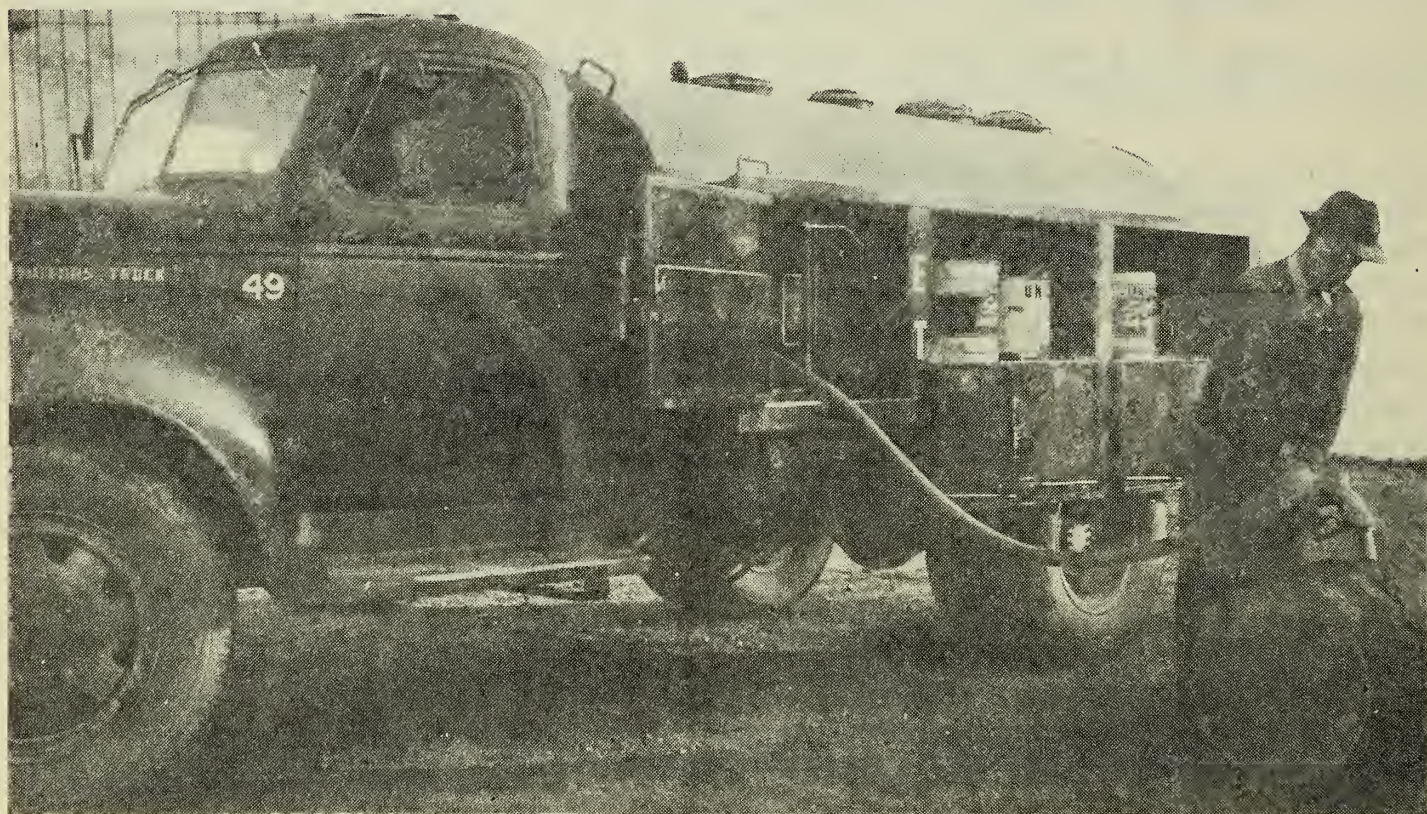
per association. This was broken down into bulk station facilities, \$6,276; delivery equipment, \$7,552; and farm storage equipment, \$9,461.

In making plans to enlarge their present cramped quarters most managers would like to provide garage space for at least three trucks. They want a private office for themselves as well as more office space for the bookkeeper and the farm servicemen. They also want the office large enough to display various automotive supplies. More warehouse space is needed by most associations.

Original cost of bulk tanks, pumps, and meters averaged \$3,247 for each association. Most tanks were vertical. Several plant managers recommended equipping the tanks with special gauges so constructed that readings of the quantities they contain can be taken from the ground.

Other recommendations from managers regarding bulk plant facilities for their area were: a capacity of 20,000 gallons for regular gasoline and 10,000 to 12,000 gallons each for ethyl gasoline, kerosene, and fuel oil. This totals at least 50,000 gallons for a plant. They also recommend enclosure of storage tanks within a heavy wire fence to reduce fire risk and to prevent pilferage.

The type, size, and care of tank trucks and their equipment also influence the making of efficient deliveries. Practically all trucks had rated capacities of 1 1/2 tons and were equipped with 850-gallon tanks, generally with four compartments. Managers favor the use of some 1,000-gallon tanks in level areas and 2-ton trucks with 850-gallon tanks for rough areas in the future. All tank trucks are equipped with power



Four compartment tank truck with meter is used experimentally by Southern States Petroleum Management Service to help decide the type of equipment the co-op should loan to members.

take-off unloading pumps and with meters. It was suggested that tank trucks be designed with more road clearance and more comfortable riding qualities. Meters might be mounted on the side to avoid backing and to speed up deliveries.

Southern States Petroleum Management Service has always emphasized the importance of proper care and maintenance of trucks. Two traveling maintenance men have been employed to service the trucks of the 17 cooperatives. Complete records on the performance and operating expense of trucks are required.

The maintenance program embodies required preventive maintenance operations at specific intervals and mileages and the accumulation of operating and maintenance data. For example, each day the servicemen are required to examine their trucks, test brakes, lights, and motor, and check gas, oil, water, and tires. Each Saturday the trucks are given complete lubrication and a more thorough checkup. Detailed checkups are also made at specified intervals and mileages, such as each month, each 5,000 miles, and each 10,000 miles.

The history record kept on each truck constitutes a "repair-before-failure" type of maintenance system. If a clutch failure occurs at approximately every 20,000 miles, replacements can be scheduled every 18,000 miles to avoid more costly repairs and loss of time from breakdowns.

The Petroleum Management Service has also sponsored a safety program. Certain definite safety rules are set up for employees to follow. To encourage safe driving, a contest is held each year with awards going to those employees having no avoidable accidents.

While local co-ops in other areas may not be able to employ traveling mechanics for servicing trucks as Southern States does, they can still adapt many of these operations to their own conditions. They can use the preventive maintenance program, the safety contest, and they can keep detailed records on truck operations, repairs, and expenses. It would even be possible for a group of local co-ops to organize an association to render truck and bulk plant maintenance services similar to those provided through Southern States.

GEARED OPERATIONS TO ROUTING SYSTEM

One of the most important of the practices that helped give efficient operations was serving patrons on well organized routes. In fact, Southern States' plant operations are geared to routes.

The co-ops have their system worked out so each farm serviceman has 10 to 12 regular routes, normally covered once every 2 weeks. During lighter winter months he delivers once every 4 weeks.

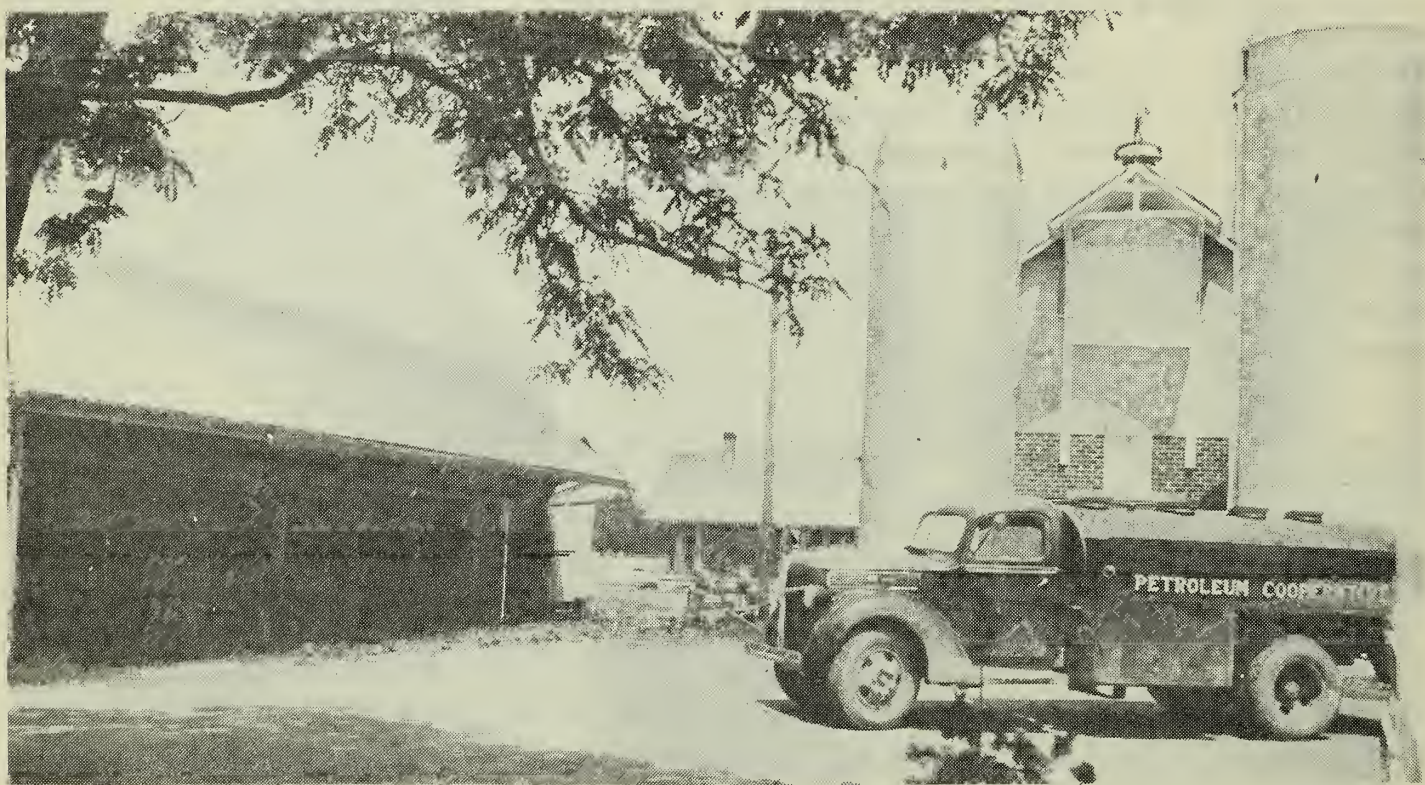
Large route maps in the office with different colored gimp strings for each route and small pins for each patron, route sheets giving names of patrons, and farm servicemen's truck books for each week that show daily

purchases of each patron serve as guides and checks on these operations. These truck books also show accounts receivable from patrons.

In this territory the route system makes it possible to serve the small users as well as the large ones at reasonable cost. It is the recommended policy to establish the second Monday's route parallel to the first Monday's, the second Tuesday's parallel to the first Tuesday's, and so on through the week. Where this is not feasible, the second week's route is set up immediately beyond the first on the same road. In either case, the two routes are sufficiently close so any special calls can be served from adjacent routes with little additional mileage.

Farm servicemen generally start delivering at the farthest point on the route. A few begin with small farms having drums and, if possible, finish on farms with large tanks to help dispose of their entire loads. Sometimes farmers with large tanks agree to take any extra fuel remaining on the tank truck at the end of the route or day. Sometimes dealer agencies and cooperative service stores with curb pumps act as dumping stations for extra fuel.

The route sheets show from 12 to 25 patrons on each route. Employees feel that 18 to 20 patrons can be served satisfactorily on a route each day. If both patrons and prospective patrons are to be called on, then 15 farmers per day are considered ample. Average round-trip mileage traveled per route was around 30 miles. To reduce mileage, the Petroleum Management Service is considering the use of trailers from which a truck could refill for its second load in serving long routes.



When large farms such as this have sufficient storage equipment deliveries need not be as frequent. They frequently also agree to take any fuel left on the tank at the end of the route.

The success of operating on a route basis depends upon farm servicemen staying on the route and keeping on schedule. Routes must be checked and revised constantly to keep up with changes. It is also essential that each patron's performance record and his seasonal fuel requirements be analyzed and that he have the proper size of storage equipment to hold his peak fuel needs for a 2-week period.

Southern States co-ops have found the route system one of their best keys to success. It has given them more efficient delivery. In addition, it has helped build volume, obtain new patrons, control credit, and handle membership relations.

Many midwestern co-ops delivering fuel on the basis of orders or calls might well experiment with the route system during late fall and winter when deliveries are lighter. In addition to improving delivery efficiency, it might help them merchandise oil, grease, accessories, or other farm supplies and aid in conducting membership work on a more systematic and efficient basis.

SET UP GUIDES FOR LOANING EQUIPMENT

Still another factor contributed to delivery efficiency in this area - loaning storage equipment to patrons. The amount of storage on farms has an important influence on delivery efficiency because it affects the size of fills, the frequency of deliveries, the number of extra trips, and the degree with which trucks stay on regular routes.

Most petroleum co-ops in the East have been loaning equipment to farmers for several years. Private oil companies in the East, and also those in the South where there are few petroleum co-ops, generally loan to their larger customers. This practice now seems to be working westward, with many co-ops in Ohio beginning to loan and others in Indiana studying it. It is still true, however, that co-ops in central and midwestern States generally sell storage equipment.

Whether or not storage equipment should be loaned has been much debated. In general, co-ops believe they must loan equipment if competitors do. This practice does give the co-op all the business of patrons who borrow equipment and it does improve delivery efficiency. In Southern States operations for 1942-43, 43 percent of all patrons had borrowed equipment and they bought two-thirds of the total volume.

However, savings in delivery costs are offset to some extent by the costs of loaning the equipment. Southern States co-ops found their loaning costs in 1942-43 averaged \$1,139 for each association - equal to about 1/4 cent a gallon of fuel and 1.4 cents for each dollar of business put through the loaned equipment; and to about .2 cent per gallon of all fuel and 1.0 cent per dollar of all business handled by associations.

These co-ops also found that loaning equipment required a substantial capital investment averaging \$9,461 for each association in June 1944.



This 270-gallon underground tank and 1-gallon stroke pump are the type of equipment most commonly loaned to members - 65 percent of value of all loaned equipment was represented by tanks of this size.

About one-half the patrons borrowing equipment had 55-gallon drums, their cost value averaging \$6 per patron. Another 45 percent had 270-gallon underground tanks and 1-gallon stroke pumps, their cost averaging \$37 per patron. The remainder had two 270-gallon tanks or a 550-gallon underground tank and a 3-gallon stroke pump with an average value of \$81 per patron.

However, about one-half the gasoline and kerosene purchased by patrons with borrowed equipment was taken by the holders of the 270-gallon tanks, which also represented 65 percent of the value of all the equipment loaned.

In addition to the points already given against loaning - extra capital required and the extra expenses for handling - many co-op leaders feel it isn't quite fair to require patrons who own their equipment to provide capital for equipment to be loaned to other patrons.

Probably the most difficult problem encountered in loaning equipment is the determination of lending standards so co-ops can do the job efficiently. For this reason, these associations have found it necessary to keep accurate records and to adopt definite policies and procedures for loaning and controlling the equipment. Past and present lending standards are shown in table 3, and use made of equipment in 1942-43 is shown in table 4. Even after these standards are determined, it may be difficult to hold exactly to them. For about one-half of Southern States patrons bought less than the amount considered necessary for efficient operation - a pressing problem now facing managers.

Table 3. - Standards used by petroleum cooperatives for loaning farm storage equipment

Type of equipment ^a	Annual volumes required	
	Past standards (minimum)	Present standards (1945)
	Gallons	
550-gallon tank; electric pump.....	-	8,000 or more
550-gallon tank; 3-gallon pump.....	2,500	5,000 - 8,000
270-gallon tank; 3-gallon pump.....	-	3,000 - 5,000
270-gallon tank; 1-gallon pump.....	1,500	1,200 - 3,500
Two 55-gallon drums, hose, and faucet...	1,000	600 - 1,200
55-gallon drum and faucet.....	550	300 - 600

^aIn the past, the standard for a 175-gallon tank and rotary pump was 1,200 gallons and for a 110-gallon tank and rotary pump, 1,000 gallons.

Table 4. - Gallons of gasoline and kerosene and total dollar volume purchased by patrons in relation to value of loaned storage equipment in 10 petroleum cooperatives during the fiscal year ended June 20-30, 1943

Classification of equipment by cost groups	Patrons per association	Average annual purchases per patron ^a		Loaned equipment per patron	Average annual purchases per dollar of loaned equipment	
		Gallons	Dollars		Gallons	Dollars
Less than \$30.....	129	775	134	6.45	120	20.76
\$30-\$49.....	121	1,575	285	37.55	42	7.59
\$50 or more.....	20	3,474	652	81.46	43	8.00
All groups.....	270	1,337	241	26.06	51	9.23
Service agencies and stores.....	2	13,436	2,039	268.36	50	7.60

^aGallons include gasoline and kerosene only. Dollar volume includes all fuels and miscellaneous merchandise.

When it comes to determining guides, these questions arise: Should a minimum annual volume be required for a piece of equipment of a certain size? Should the peak fuel requirements for the interval at which routes are covered be used? Or should equipment be placed on those farms where the greatest saving in delivery time and expense would result?

In answering the first question, it appears desirable that in this area at least 2,000 gallons be put through a 270-gallon tank a year. This would still result in loaning costs of about 1/4 cent a gallon. If it isn't practical to loan 175- or 200-gallon tanks to patrons using between 1,500 and 2,000 gallons a year because of the relatively high costs of such tanks, a co-op might try using the larger 270-gallon tank and then cover the routes every 3 weeks instead of every 2.

Although annual volume is an important and simple standard to use, the peak fuel requirements for the interval at which a route is covered has an important bearing on the size of tank a farmer needs. It is obvious that a steady user throughout the year on a regular route would not need as large a storage capacity as one with a highly seasonal requirement.

The use of the peak 2-week requirement would probably result in the use of larger annual volume standards in the area now served by the Southern States co-ops. For instance, if a farmer with a 270-gallon tank required a 250-gallon delivery each 2 weeks during his peak month of May, and that month's requirements represented 20 percent of his annual needs, his annual volume would be 2,500 gallons. If it was 25 percent, the annual total would be 2,000 gallons.

The use of such a standard would require a record of each patron's performance. But this record is needed anyhow to show the size and frequency of deliveries to his farm. It will provide a sound basis for loaning the proper size of equipment and setting up workable routes.

Locations of patrons generally cannot be used as a standard for loaning equipment so long as all oil companies do not use this basis and do not make any differential in delivery charges based upon distance from bulk plants.

While it may seem advisable to look toward the time when farmers will buy adequate storage facilities, competition still makes it necessary to loan in many parts of the country. When loaning is necessary, these suggestions are made:

1. Sell drums and loan only tanks and pumps.
2. Loan skid or standard above-ground tanks rather than the underground type. This is especially desirable in loaning to tenant farmers.
3. If there is demand for underground tanks, sell them to the farmers and loan only the pumps.
4. Where deliveries are made on definite routes every 2 weeks, use the peak 2-week requirement of fuel as one of the main standards in determining the size of tank to loan.
5. Use a minimum standard of 2,000 gallons per year for a 270-gallon tank and pump and 4,000 gallons per year for a 550-gallon tank and pump in territory similar to that served by co-ops affiliated with Southern States Cooperative.
6. Where it appears advisable to loan 270- or 300-gallon tanks to patrons whose volumes are between 1,500 and 2,000 gallons because of relatively high costs of 175- or 200-gallon tanks, then consider covering routes at 3-week rather than 2-week intervals.

LET MANAGEMENT SERVICE HELP

Last on the list of reasons for low handling costs is the management service provided the locals by Southern States Cooperative. As mentioned, it has a contract with each co-op to give assistance or general supervision over management, accounting, distribution, publicity, educational work, and operating policies. Such policies, however, are determined in a democratic manner by meetings and discussions with local managers.

Under the direction of the management service, local cooperatives have kept a detailed set of records not only on the association as a whole but on each truck and farm serviceman. Analyses of these records are supplied to managers and directors monthly. Such control factors as shrinkages, accounts receivable, and delivery and total handling costs per gallon are watched closely. After all the farmer-member is interested in the final cost of his fuel which is greatly affected by the cost of handling it through his cooperative.

The educational program of the management service has been one of the important factors contributing to the progress of these associations. It consists of training schools for managers, farm servicemen, bookkeepers, and directors, and local monthly employee meetings at each plant. Local co-ops are also helped to plan and hold annual meetings.

ALWAYS ROOM FOR IMPROVEMENT

Good as the delivery performance of these co-ops is - and the pattern they have followed is certainly good enough for other co-ops to profit by - there is still room for improvement.

The co-ops can increase volume by filling in patrons on present routes and by getting more volume from present patrons. They can use larger truck tanks in level areas, be more careful in loaning their storage equipment, and further develop their preventive maintenance program for trucks. They can experiment with trailers for refilling the trucks on the longest routes and the possible use of branch or sub-bulk plants in areas of heaviest consumption to shorten routes.

Some associations can increase gasoline margins by reducing shrinkages. They can try for wider margins in the future to give them greater net savings to pay off debts, to expand, or to pay larger patronage refunds.

Some of the co-ops are thinking about handling fuel oil to increase their margins, at the same time remembering that more than 50 percent of their total business must be done with farmer-members to keep their agricultural cooperative status or that more than 85 percent of all supply purchasing business must be done with agricultural producers to keep their income tax exempt status.

All can handle more automotive and miscellaneous supplies. Farm petroleum co-ops in the Midwest generally have standard type service stations as well as bulk plants but that hasn't been the policy of those affiliated with Southern States. However, some local co-ops indicated that members may want this additional service in the future.

In looking for ways to develop a satisfactory petroleum service for areas with small users that don't have cooperative service now, it has been suggested that a few "pilot" plant co-ops be established. Where many farms need fuel for their machinery, a petroleum co-op might be set up on a "come and get it" or dock station basis. One tank truck might serve the large users and service agencies in the area. Another possibility would be a combination bulk and service station unit with large underground tanks serving as storage for both. In areas with the smallest demands, a bulk plant might be operated entirely on a "come and get it" basis as a department of a service store or agency.

And finally, this suggestion to help deliveries has been given ... encourage farmers to improve their lanes, perhaps even do it cooperatively with each association owning a rock crusher and grading machinery.

